

STTH112

High voltage ultrafast rectifier

Features

- Low forwarded voltage drop
- High reliability
- High surge current capability
- Soft switching for reduced EMI disturbances
- Planar technology

Description

The STTH112, which is using ST ultrafast high voltage planar technology, is specially suited for free-wheeling, clamping, snubbering, demagnetization in power supplies and other power switching applications

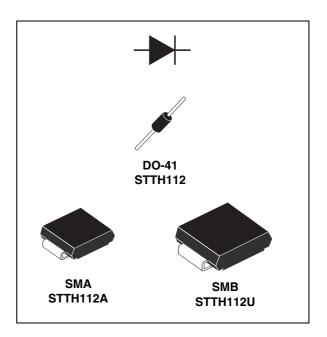


Table 1. Device summary

Symbol	Value
I _{F(AV)}	1 A
V _{RRM}	1200 V
T _{j (max)}	175 °C
V _{F (max)}	1.65 V

Electrical characteristics STTH112

1 Electrical characteristics

Absolute ratings (limiting values)

Symbol	Parameter		Value	Unit		
V_{RRM}	Repetitive peak reverse voltage				1200	V
V _(RMS)	Voltage rms				850	V
		TI = 85°C	δ =0.5	DO-41		
I _{F(AV)}	I _{F(AV)} Average forward current		δ =0.5	SMA	1	А
			δ =0.5	SMB		
				DO-41	20	
I _{FSM}	Forward surge current t = 8.3 ms			SMA	10	Α
				SMB	18	
T _{stg}	Storage temperature range				- 50 + 175	°C
T _j	Maximum operating junction temperature				+ 175	°C

Table 2. Thermal parameters

Symbol	Parameter			Value	Unit
		L = 10 mm	DO-41	45	
R _{th (j-l)}	Junction to lead		SMA	30	°C/W
			SMB	25	C/VV
R _{th (j-a)}	Junction to ambient	L = 10 mm	DO-41	110	

Table 3. Static electrical characteristics

Symbol	Parameter	Tests conditions		Min.	Тур.	Max.	Unit
I-	Reverse leakage current	V _R = 1200 V	T _j = 25 °C			5	μA
IR	Treverse leakage current	VR = 1200 V	T _j = 125 °C			50	μΛ
			T _j = 25 °C			1.9	
V _F	Forward voltage drop	I _F = 1 A	T _j = 125 °C		1.17	1.65	V
			T _j = 150 °C		1.10	1.55	

Table 4. Dynamic electrical characteristics

Symbol	Parameter	Tests conditions		Min.	Тур.	Max.	Unit
t _{rr}	Reverse recovery time	$I_F = 0.5 A$ $I_{rr} = 0.25 A I_R = 1A$	T _j = 25 °C			75	ns
t _{fr}	Forward recovery time	I _F = 1 A	T 05.00			500	ns
V _{FP}	Forward recovery voltage	dl _F /dt = 50 A/μs V _{FR} = 1.1 x V _{Fmax}	T _j = 25 °C			30	V

Figure 1. Conduction losses versus average Figure 2. Forward voltage drop versus current forward current

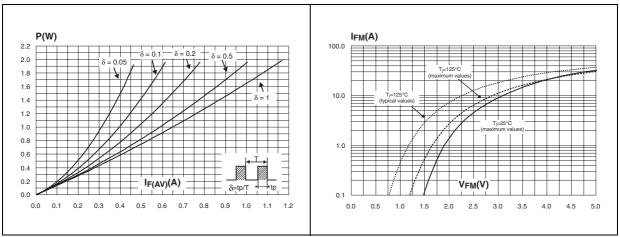


Figure 3. Relative variation of thermal impedance junction ambient versus pulse duration (DO-41)

Figure 4. Relative variation of thermal impedance junction ambient versus pulse duration (epoxy FR4) (SMA)

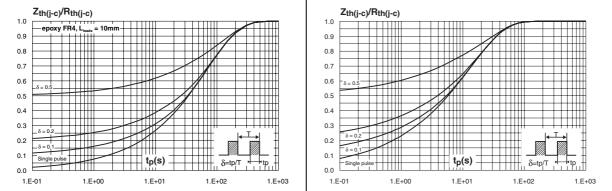
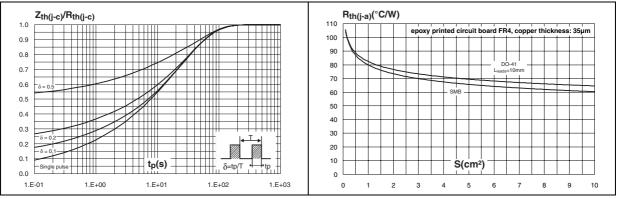


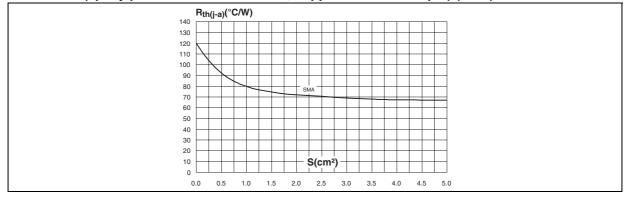
Figure 5. Relative variation of thermal impedance junction ambient versus pulse duration (epoxy FR4)(SMB)

Figure 6. Thermal resistance junction to ambient versus copper surface under each lead (DO-41, SMB)



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Figure 7. Thermal resistance junction to ambient versus copper surface under each lead (epoxy printed circuit board FR4, copper thickness: 35µm) (SMA)



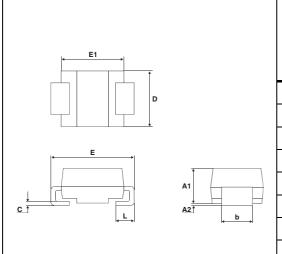
STTH112 Package information

2 Package information

- Epoxy meets UL 94, V0
- Band indicates cathode
- Bending method (DO-41): see Application note AN1471

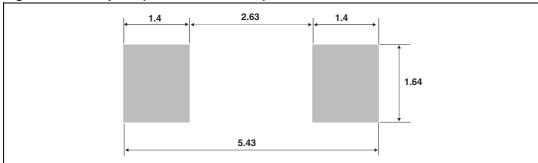
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Table 5. SMA dimensions



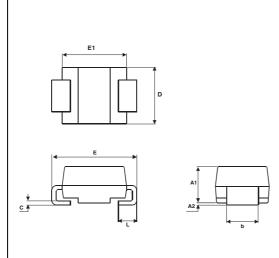
	Dimensions				
Ref.	Millim	neters	Inc	hes	
	Min.	Max.	Min.	Max.	
A1	1.90	2.45	0.075	0.094	
A2	0.05	0.20	0.002	0.008	
b	1.25	1.65	0.049	0.065	
С	0.15	0.40	0.006	0.016	
D	2.25	2.90	0.089	0.114	
Е	4.80	5.35	0.189	0.211	
E1	3.95	4.60	0.156	0.181	
L	0.75	1.50	0.030	0.059	

Figure 8. Footprint (dimensions in mm)



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Table 6. SMB dimensions



	Dimensions					
Ref.	Millimeters		Inc	hes		
	Min.	Max.	Min.	Max.		
A1	1.90	2.45	0.075	0.096		
A2	0.05	0.20	0.002	0.008		
b	1.95	2.20	0.077	0.087		
С	0.15	0.40	0.006	0.016		
D	3.30	3.95	0.130	0.156		
Е	5.10	5.60	0.201	0.220		
E1	4.05	4.60	0.159	0.181		
L	0.75	1.50	0.030	0.059		

Figure 9. Footprint (dimensions in mm)

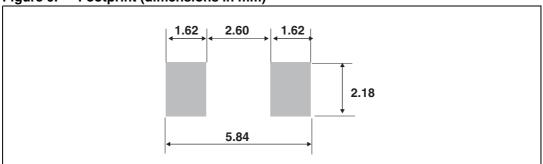
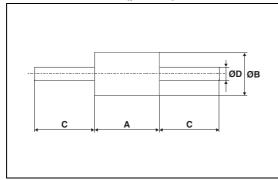


Table 7. DO-41 (plastic) dimensions



	Dimensions					
Ref.	Millimeters		ef. Millimeters I		Inc	hes
	Min.	Max.	Min.	Max.		
Α	4.07	5.20	0.160	0.205		
В	2.04	2.71	0.080	0.107		
С	25.4		1			
D	0.71	0.86	0.028	0.034		

3 Ordering information

Table 8. Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery Mode
STTH112	STTH112	DO-41	0.34 g	2000	Ammopack
STTH112A	H12	SMA	0.068 g	5000	Tape and reel
STTH112U	U12	SMB	0.11 g	2500	Tape and reel
STTH112RL	STTH112	DO-41	0.34 g	5000	Tape and reel

4 Revision history

Table 9. Document revision history

Date	Revision	Changes
Jan-2003	2	Initial release.
22-Jun-2005	3	New value of T_j = 150 °C added to table 2. Dimensions A1 E and D updated in Table 4. Data sheet reformatted. No other technical changes.
20-Mar-2007	4	Reformatted to current standards. Updated dimensions and footprints for SMA and SMB packages.
30-Sep-2009	5	Updated table 7 package dimensions.

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